



BENCHMARKS

The University of North Texas Computing Center Newsletter

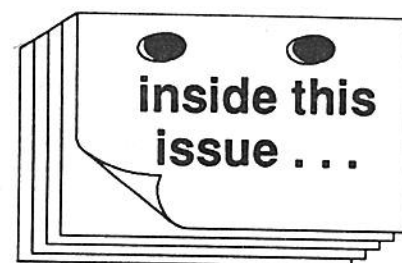
VOLUME 11 NUMBER 7

The Networking of North Texas

By Dave Molta, Director of Academic Computing (BITNET: MOLTA@UNTVAX)

The University of North Texas has long recognized the strategic importance of providing a state of the art data communications and networking infrastructure to the university community. Among the benefits of such a system are enhanced personal productivity, increased collaboration and cohesiveness, invigorated teaching and learning, and the provision of high quality student services. The development of sophisticated and highly functional communications systems is an ongoing focus of the university's Computing Center and requires a concerted effort of the central administration as well as academic departments and administrative offices. As the university celebrates its centennial year, the continued development of this system is among the most important information resource issues facing the institution. Our goal is to provide a computing environment that allows an individual to communicate, via a single network connection into their workstation, with departmental, university-wide, regional, national, and international information systems. It is our hope that this "networked campus" will greatly enhance the university's goal of achieving excellence in instruction, research, and service to the community.

FOCUS ON COMMUNICATIONS



□ GENERAL INFORMATION

The Networking of North Texas...	1
A Tale of Two Pairs	5
New SPSS-X	6
System Command Guide.....	7
Networking Bibliography	8
Talk About Student Government.....	10
BBSs Available on the Internet....	11
The BITNET Connection.....	11
LIST of the Month	12
1990 Fall Short Courses	14
Staff Activities	15
BENCHMARKS FORUM.....	15

□ MICROCOMPUTERS

Connecting Microcomputers to Host Systems at UNT	16
MICRO-TIPS.....	19
Cliff Stoll Interview Broadcast....	22
Computer Trojans and Viruses....	22
Computer Sales	23
Computer Terminology :)	23

□ VAX COMPUTER CLUSTER

VAX System News	24
Best of the BBS.....	24
VAXcluster Usage Statistics	25

□ COMPUTING TECHNICAL SERVICES

Mainframe Performance Statistics.....	26
Disk Backup Schedules	27
Program Hit Parade	27

SERVICES AVAILABLE TO USERS OF THE UNT COMPUTING FACILITIES

The UNT Computing Center is located in the Information Sciences Building (ISB), Room 119. Phone Numbers:

Computing Center: (817) 565-2324
HelpDesk: (817) 565-4050
Micro Support: (817) 565-2316, 565-2319
Graphics Lab: (817) 565-3479
ISB I/O Area: (817) 565-3890
BA I/O Area: (817) 565-2350

All personnel listed below can be contacted either by calling the Computing Center or by sending them electronic mail on MUSIC/SP (ID-codes follow each name. All IDs are on BITNET node UNTMUSIC).

Benchmarks - Claudia Lynch (AS04)

Information & ID-Codes; Disk Space Problems - Theresa Russell

Statistical/Research Support - George Morrow (AS01), Panu Sittiwong (AC09), Phanit Laosirirat (AC44)

Academic ADABAS/COM-LETE - Cathy Hardy (AC55)

CRSP & COMPUSTAT Problems - Panu Sittiwong (AC09), Phanit Laosirirat (AC44)

Student Programming Problems - CSCI Dept., GAB Room 550; BCIS Dept., BARoom 152

Problems with JCL, Passwords, or Operating Systems; or Communication/Terminal Problems - Help Desk

Data Entry; Test Scoring & Analysis - Betty Grise

Administrative Applications - Coy Hoggard

Printout Retrieval - ISB or BA I/O Operators

DIALING-UP UNT COMPUTERS OVER THE TELEPHONE

Phone numbers for the Local Area Network (LAN) are:

300-2400 BAUD: (817) 565-3300
 300-1200 BAUD: (817) 565-3499
 300-9600 BAUD: (817) 565-3461
 300-9600 BAUD: D/FW METRO 429-6006, 429-9314

Area code 214 must dial 817 before the METRO #.

The numbers that accommodate multiple baud rates have an autobaud feature that requires you, once connection with the remote modem is made, to hit the <RETURN> key repeatedly so that the receiving modem can determine the appropriate baud rate. When you have established a communications link, the # prompt will appear on your screen and you can enter one of following CALL commands to connect with the computer of your choice.

CALL 8040 connects with the HDS/8083 (supports line editing or PCWS). Operating environments available are: MUSIC/SP.

CALL 3270 connects with the HDS/8083 through a 3270 protocol converter (supports full-screen editing). Operating environments are: MUSIC/SP, VM/CMS, ADABAS/COM-LETE

CALL DEC connects with the VAXcluster (VMS)

CALL 780 connects with the Sequent (Unix)

CALL 3000 connects with the Libraries' HP-3000 (Bibliographic database).

CALL 6800 connects with the NBI (Unix)

Communications Settings			
LAN addresses	Data Bits	Parity	Stop Bits
DEC, 3000	8	N	1
8040, 3270, 780, 6800	7	E	1

HOURS FOR UNIVERSITY OF NORTH TEXAS COMPUTER ACCESS AREAS : Fall 1990*

Location	Days	Times
Computing Center RJE	Sunday Monday-Saturday	Noon-Midnight 7 a.m. Mon.-Midnight Sat. (Open 24 hours/day)
ISB 110 Terminal Area	Sunday Monday-Thursday Friday Saturday	1 p.m. - Midnight 8:00 a.m. - Midnight 8:00 a.m. - 9 p.m. 9 a.m. - 9 p.m.
College of Business	Sunday Monday-Thursday Friday, Saturday	Noon-11:45 p.m. 8:15 a.m.-11:45 p.m. 8:15 a.m.-7:45 p.m.
GAB 550C	Sunday Monday-Thursday Friday Saturday	4 p.m. - Midnight 8 a.m. - Midnight 8 a.m.-5 p.m. 2 - 8 p.m.
Graphics Lab	Sunday Monday-Thursday Friday Saturday	1 p.m. - Midnight 8 a.m. - Midnight 9 a.m.-9 p.m. 9 a.m.-9 p.m.
Willis Library	Sunday Monday-Thursday Friday Saturday	1 p.m. - Midnight 7:30 a.m. - Midnight 7:30 a.m.-9 p.m. 9 a.m.-9 p.m.

*Hours may vary. Check MUSIC/VAX News and/or posted schedules for exceptions.

This issue of Benchmarks was produced by the Documentation Services section of Academic Computing, using Xerox Ventura Publisher on an AT clone and printed on an Apple LaserWriter II. Unless otherwise noted, articles or information may be reproduced for nonprofit purposes provided the publication and issue are fully acknowledged.

Our goal is to provide a computing environment that allows an individual to communicate, via a single network connection into their workstation, with departmental, university-wide, regional, national, and international information systems.

In the Beginning . . .

The development of networking at UNT closely parallels the evolution of computer systems and the trends towards distributed processing. During the 1960s and 1970s, most computing at UNT took place on a central mainframe system. The communications infrastructure needed to support such a system was initially quite minimal, since nearly all processing was batch oriented and no requirements for on-line terminal access existed. These needs began to change when, in 1974, the first video display terminals were added to the IBM 360/50 computer system. In 1976, a Hewlett Packard Model 2000 mini-computer was implemented, resulting in further needs for on-line terminal access. These terminal connections were initially provided via dedicated serial communications links. In 1980, a National Advanced Systems AS/5000 mainframe computer was purchased and the MUSIC operating system was acquired to provide interactive access for academic users. Still, communications capabilities were somewhat unsophisticated, consisting of hard-wired terminals running at 1200 bits per second and dial-up modems operating at 300 bits per second.

The Broadband

In 1982, the university embarked on a major upgrade of its computing and

communications systems, including the installation of a campus wide broadband cable television system which was to serve as the backbone for campus data communications. Construction of the major portion of the broadband network was completed in 1983 and coincided with upgrades to the campus mainframes as well as the acquisition of three VAX 11/780 mini-computers for academic use. The broadband system, which currently consists of over 8 miles of truck cable and nearly 6,000 taps, carries a variety of data and video signals including asynchronous and synchronous traffic at speeds of up to 19,200 bits per

second as well as high-speed traffic at a speed of 2 million bits per second.

Beyond the Broadband

While the broadband network proved to be a very reliable communications system, changes in computer technology led the university to reconsider its

strategic direction in this area. The explosion of microcomputers during the mid-1980s, together with the increased viability of high-speed network technologies, led to a realization that the broadband communications system would not have the capabilities to meet the distributed processing requirements of the 1990s. There was also an increased realization that wherever possible, industry standard communications technologies should be preferred over proprietary systems. By 1988, the university was rapidly expanding its communications network with the implementation of numerous high-speed laboratory, departmental, and office networks as well as through connections to regional and national research networks. In 1989, UNT was recognized for its rapid progress in this area when it was selected, along with 21 other nationally prominent universities, as a member Novell, Inc.'s Technology Transfer Partnership (TTP) Program, resulting in a significant equipment grant from Novell to aid in

In 1989, UNT was recognized for its rapid progress in this area when it was selected, along with 21 other nationally prominent universities, as a member Novell, Inc.'s Technology Transfer Partnership (TTP) Program, resulting in a significant equipment grant from Novell to aid in the development of UNT's communications infrastructure.

the development of UNT's communications infrastructure.

Participation in Novell's TTP led to even more rapid expansion of microcomputer networks on campus. At the same time, numerous academic departments and research groups began to acquire high-speed Unix computer systems which were, by their very

nature, networked devices. Since most networks were based on the IEEE 802.3 Ethernet network technology, it soon became apparent that in order to reap the full benefit of these systems, a high-speed backbone would need to be implemented.

Initially, the university considered using the broadband system as a conduit for an IEEE 802.3 10Broad36 Ethernet system. This system, which would operate at a speed of 10 million bits per second, would have required the installation of high-speed radio frequency modems and bridges in each building that required a connection to the network. The cost was estimated to be approximately 8 to 10 thousand dollars per building. While the university was prepared to invest the necessary resources to provide this strategically important service, consideration was also given to alternative technologies. Specifically, significant attention was focused on fiber-optic communications technologies that would not only provide Ethernet connectivity at 10 million bits per second, but would also position the university to take advantage of ultra high-speed 100 million bit per second technologies that were just beginning to appear on the market. After careful consideration of the alternatives, a

decision was made in late 1989 to install a fiber-optic communications system that would serve as a backbone communications system well into the 1990s and beyond.

A task force was designated and

and uncertainty over FDDI standards related to bridging of Ethernets, it would be more appropriate to implement a fiber-optic Ethernet initially with a commitment to move to FDDI by 1992 or 1993. The final network

design called for a distributed star topology with three major hub sites on campus. Each of these hub buildings, which would be interconnected with between 36 and 48 fibers would have a multi-protocol router from Cisco Systems installed within it. Remaining buildings would then be attached to the hub sites using 12 fibers, with each building's traffic isolated on a subnetwork. In this sense, the Cisco routers would actually serve as "backbones" for the build-

ings serviced by each hub.

Within each building, Ethernet networks were to be attached to the hub sites via fiber-optic transceivers from Cabletron Systems. While some buildings had existing thinwire Ethernet networks that would be attached to the backbone using Ethernet repeaters, the task force recommended the adoption of the IEEE 10BaseT Ethernet on unshielded twisted pair standard for all new installations. By September, 1990, two major buildings were equipped with 10BaseT Ethernet

Criteria for a Communications Network at UNT

- ① The network should be "workstation-centric" and must compliment the computing needs of individual workstation users.
- ② The network should be designed based on a peer-to-peer rather than master-slave relationship between workstations and multiuser host systems.
- ③ The network should be engineered in a manner that allows for dedicated connections between buildings on campus.
- ④ The network should be built using industry-standard software and hardware, wherever possible.
- ⑤ The network should be designed in a manner such that its overall reliability approaches that of the campus telephone system.
- ⑥ The network should be designed in a manner that assures flexibility with respect to future network hardware and software products.
- ⑦ The network should be designed as a platform for a campus-wide electronic mail system that is powerful, easy to use, and interfaceable to regional and national education and research networks.

charged with the responsibility of developing a plan for a fiber-optic communications network. Among the design objectives for the new system were the criteria listed in the box above.

Where We Stand

While consideration was given to a backbone based on the Fiber Distributed Data Interface (FDDI) specification, it was decided that due to a combination of budgetary constraints

equipment from Cabletron Systems, and several more buildings were scheduled for installation during fall, 1990.

Phase I of the fiber-optic installation, which was scheduled to be completed by late September, 1990, includes the connection of 16 buildings serving the majority of computing-intensive departments on campus. All but one of the buildings are to be connected using the existing campus-wide conduit and steam tunnel system, resulting in significant cost savings. Including router ports, transceivers, cabling, and installation, the cost of the new backbone network was approximately \$12,000 per building. Thus, for roughly 25% more per building than would have been the cost for broadband, we are able to install a fiber-based network that not only serves as an Ethernet backbone, but also provides for dedicated building-to-building Ethernets as well as a platform for future movement to FDDI technology.

It is expected that Phases 2 and 3 of this project will be completed by 1992, resulting in the connection of all major buildings to the campus backbone. By that time, we hope to be ready to implement FDDI connections between the hub sites as well as to certain select buildings that require very high-speed access. We also anticipate that increasing numbers of departmental users, perhaps as many as 2,000 by 1992, will be equipped with connections into this network.

Much work remains to be done in order to provide reliable and easy-to-use network services such as electronic mail, file transfer, and high-speed access to host computing systems. A pilot-project is under way that links several departmental mail systems to each other, allowing for transparent exchange of messages, data files, and programs. A number of campus microcomputer labs have been imple-

Continued on page 6.

A Tale of Two Pairs: A Story of Twisted Pair EThernet in Chilton Hall

By Eric Lipscomb, student Network Assistant for the School of Community Service (BITNET: LIPS@UNTVAX)

School of Community Service

If you had told me three months ago that I would be punching down telephone wiring blocks, making custom RJ45 telephone cables, and using a TDR and an oscilloscope to measure velocity of propagation of 25-pair telephone cable, I would have laughed in your face. "That's what the telecommunications people are for," I would have said after catching my breath. But during the month of August, I worked 60 and 70 hour weeks doing exactly that. As a network supervisor, I often forget that my job entails more than providing user support and managing network software.

Background

On August 6, 1990, the School of Community Service moved from Oak Street Hall into the newly-renovated Chilton Hall, along with the School of Human Resource Management, the Center for Instructional Services, the Media Library, and several other departments. Community Service, CIS, and the Media Library all had working networks to move into the new building, each with its own unique configuration: almost all of Community Service users were connecting through the campus broadband; CIS had both PC and Macintosh workstations; and the workstations in the Media Library were bridged off the LIBRARY server located in Willis Library. And each network in Chilton wanted to be interconnected within the building, in addition to adding Human Resources to the Community Service file server (SCS). This was simply not feasible with the previous hardware configuration that each network had.

The Plan

A little over a year ago, Computing Center and departmental representatives began deliberations on how to interconnect Chilton Hall. These representatives finally decided to wire the entire building for twisted-pair ethernet. This wiring scheme (the same as used for telecommunications) offered many benefits for networking: ease of installation (the building contractors would just run more "telephone wire" through the building), ease of use and maintenance (described below), and reliability. All parties agreed, the equipment was purchased, and installation began.

From a workstation management point of view, I was pleased with what unshielded twisted-pair ethernet (UTP) had to offer. Unlike thin coax ethernet, UTP uses a star topology. Each workstation or file server in the network is connected individually to a central point (in our case a UTP "concentrator"), and that concentrator may in turn be connected to another concentrator, and so on. This is beneficial to network continuity. For example, if a user turns psycho and cuts the cable connecting his computer to the network, only his link to the network is severed. Unlike thin wire ethernet, the entire network would not go down.

Relocatability is also simplified with a star topology. In Chilton, each office has a data connection run from the office to a wiring closet. For those offices that have computers, this data line is patched into a concentrator. When people change offices (as happens often here), reconnecting them to the network is as simple as disconnecting the connection from their old office and connecting the new office to the concentrator. No network downtime; no hassle on the user's part.

Trouble

So here comes the start of August; the building is complete, the basic network hardware has been installed; we should be able to move in, plug in to the network, and go. This is exactly what did not happen. Without going into the details of the difficulties we experienced, it was then, the second week of August, that I learned a little more about what my job as a network supervisor entails.

Once we realized that there was trouble somewhere within the building, a "Network SWAT Team" formed, consisting of Tom Newell (Telecommunications), Kevin Mullet and Mike Maner (Computing Center — Data Communications), Dave Motta (Academic Computing — Computing Center), Sue Pierce, Altaf Ali, and myself (Community Service), Jim Curry and Russell Smith (Micro Maintenance), and several representatives from Cabletron (the manufacturer of our network hardware). This team worked many long days and nights, including weekends, testing various portions of the network throughout the entire building. In trying to isolate the problem, we all became intimately familiar with UTP.

A Solution

Along the way, we discovered several problems. Jim Curry and Russell Smith encountered difficulties with the Cabletron interface cards and software drivers, for which Cabletron approved temporary fixes. We also found what we thought were inconsistencies with the new wiring in the building. Fortunately, the main obstacle was a particular brand of wire that was being used to make "cross-connects" in the wiring closets. Once this wire was replaced, the network came to life. We might have isolated this problem sooner had it not been for the ongoing construction in Chilton and for registration, which required Tom Newell and Mike Maner to spend a great deal of time at the Coliseum.

The same fixes implemented in Chilton have been put into effect in Matthews Hall, which has experienced the same difficulties that we experienced in Chilton.

Despite the initial difficulties we experienced in Chilton, the building network is now running smoothly. Both the users and the managers of the networks in Chilton have returned to a normal routine, virtually unaware of the new network wiring, except for the overall speed increase afforded by the use of twisted pair ethernet. ■

Network continued from page 5.

ented in a manner that not only allows applications to be loaded from a local file-server, but also allows application access from remote servers. Access to both local and off-campus computer systems is also being enhanced by the addition of Ethernet connections into the IBM-compatible mainframe and library card-catalog as well as a high-speed T1 connection to the international Internet. These high-speed links will provide for file-transfer speeds up to 100 times as fast as older asynchronous technologies would permit. Other applications that are currently being evaluated include scheduling systems, distributed administrative database systems, campus bulletin boards, dial-in access to microcomputer networks, and on-line instructional and research databases. These applications will provide students, faculty, and staff with the information resources needed to not only enhance personal and group productivity but also to improve the effectiveness of the university as a whole. ■

New SPSS-X

Version 4 of SPSS-X is available for testing on OS/MVS. We will keep it in a test mode for about 1 month. To execute the new version, change the job card to:

// EXEC SPSSX40

Information about the new version can be printed by issuing the SPSS-X command:

INFO ALL

If want to look at or make a copy of a particular page of the SPSS-X Version 4 manual, call Panu at the Computing Center (545-2324). ■

System Command Guide: A Handy Cross-Reference

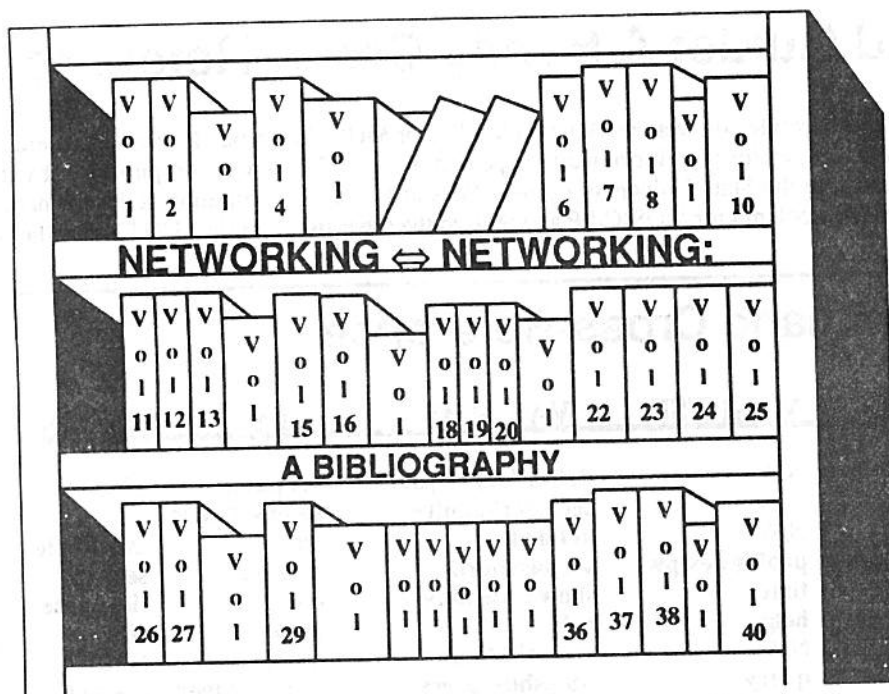
Have you ever entered MS/DOS commands while you were working on MUSIC or MUSIC commands when you were on VAX/VMS? If so, then the table below is just for you. It originally appeared in the *CCIT Newsletter*, published by the University of Arizona/Tucson, but we found it in the State University of New York at Buffalo's Computing and Information Technology newsletter, *Interface*. We've added a column for MUSIC/SP and revised the other lists to reflect UNT's installation of these operating systems. ■

A Command Cross-Reference

Description	VM/CMS	MUSIC/SP	VAX/VMS	Unix	MS/DOS
Set Search Path	link+access	N/A	define logical path	set path=	path
Set Terminal Type	terminal type	N/A	set term/inquire	setenv TERM	N/A
Set Terminal Chars	terminal	N/A	define key	stty	ctty,mode
Change Password	dirm pw	profile newpw	set password	passwd	setpass
Display date/time	query time	time	show time,time	date	time,date
Online Help	help	help	help	man	N/A
Online Tutorial	help/tasks	N/A	vmscat,edtc	learn	N/A
Show all active users	query names	query	who,show users	w,who,finger	userlist*
List a file	type	display,list	type	cat	type
Page through a File	browse	browse	type/page,more	more	more
Change File Protection	rename	set	set protection	chmod	attrib
Copy Files	copyfile	copy	copy	cp	copy,xcopy
Delete Files	erase	purge	delete	rm	delete
Rename Files	rename	rename	rename	mv	rename
Print a File	print	prt,ptpch	prt	lpr	print,nprint*
Search for pattern	N/A	N/A	search	grep	find
Sort Files	sort	mnsort,sort	sort	sort	sort
Difference Files	compare	N/A	differences	diff	fc,comp
List Directories	filelist,listfile	library	dir	ls	dir
Print Working Directory	query disk	N/A	show default	pwd	cd
Change Directory	access	N/A	set default	cd	cd
Make a Directory	N/A	N/A	create/dir	mkdir	mkdir
Remove a Directory	N/A	N/A	delete	rmdir	rmdir
Show Disk Usage	query disk	space	show quota	quota -v	chkdsk
Mail	mail	mail	mail	mail	ml*
Send Interactive Msg	tell	tmsg	send	write	send*
Read Usenet News	N/A	N/A	anu	rn	N/A
Transfer files	kermi,sendfile	kermi,sendfile	kermi,send/file,ftp	kermi,ftp	N/A
Display Process Status	indicate user	status	show process	ps	N/A
Create a Process	N/A	N/A	spawn	csh,sh	command
Terminate a Process	N/A	N/A	stop/id=##	kill	exit
Terminate a Program	hx	PA 1/ca	ctrl-y	ctrl-c	ctrl-Break
Edit files	xedit	edit,tedit	edit,edit/tpu	vi	edlin
Debuggers	debug	N/A	debug,run/debug	dbx,gdb	debug
Submit Batch Job	submit (MVS)	osje (MVS)	submit	N/A	N/A
Receive a file	rdrlst	mail	receive	N/A	N/A
Logout	logoff,gone	off	logout,eoj	CTRL-D	logout*
Get Userid Information	N/A	userid	finger,userid	finger	syscon*
Change Prompt	set rdymsg	N/A	set prompt=	set prompt=	prompt

*PCs attached to Novell networks only

General Information



This "Networking Bibliography," by Elliott Parker (371.UFUR@CMUVM) was posted to the September 21, 1990 issue of *CCNEWS: An Electronic Forum for Campus Computing Newsletter Editors*. We have taken the list, expanded it, and added documents available from the Computing Center at UNT. Some citations are incomplete, but should be sufficient to get a copy of the material. — ed.

- *Accessing the SIMTEL20 Archives From BITNET*. This is the essential guide to getting any of the thousands of programs and documentation from "Simtel20" for BITNET users. Send e-mail to LISTSERV@RPIEDCS and in the body, put **GET PDGET HELP**.
- *An Introduction to BITNET*. Academic Computing Services document. Available from the Computing Center main office (ISB 119).
- Anderson, Bart. *UNIX communications* (1987). The best, most comprehensive book for getting started in using Usenet and Netnews.
- *ANU News Reference Guide*. Academic Computing Services document. Available from the Computing Center main office (ISB 119).
- *ANU News Users Guide*. Academic Computing Services document. Available from the Computing Center main office (ISB 119).
- Banks, Michael A. *Delphi: The official guide* (1990, 2c).
- Barron, Billy. *Accessing On-Line Bibliographic Databases* (University of North Texas Academic Computing Services 1990). A list of library systems on The Internet. Available via anonymous FTP from [vaxb.acs.unt.edu](ftp://vaxb.acs.unt.edu) — the file is called **LIBRARIES.TXT**. Hardcopies available in the Computing Center main office (ISB 119).

"Internet BBS," *Benchmarks: The University of North Texas Computing Center Newsletter* (October 1990, Vol.11, No. 7, pp. 11).

"Networks Help" (UNT, 1990). A pieced together VMS help file on the existing networks. Available via anonymous FTP on [vaxb.acs.unt.edu](ftp://vaxb.acs.unt.edu) — the file name is **NETWORKS.TXT**. UNT VAX users can type **HELP NETWORKS**.

"Internet Databases," *Benchmarks: The University of North Texas Computing Center Newsletter* (April/May 1990, Vol.11, No. 3, p. 18). (CINTDASE BARRON-B)

"WAN Security & Viruses," *Benchmarks: The University of North Texas Computing Center Newsletter* (June 1990, Vol.11, No. 4, pp. 7-10). (SECURITY-BARRON-B)

- Baczewski, Philip. "The BITNET Connection: Getting on the LISTS," *Benchmarks: The University of North Texas Computing Center Newsletter* (May/June 1989, Vol.10, No. 5, pp. 11-12).

"The BITNET Connection: Your Serve . . .," *Benchmarks: The University of North Texas Computing Center Newsletter* (September 1989, Vol.10, No. 7, pp. 29-30).

"The BITNET Connection: Is Anyone Out There?," *Benchmarks: The University of North Texas Computing Center Newsletter* (October 1989, Vol. 10, No. 8, pp. 10-12). (EMILIO BACZEWski-P)

"The BITNET Connection: From Poetry to Software," *Benchmarks: The University of North Texas Computing Center Newsletter* (January/February 1990, Vol.11, No. 1, pp. 6-8).

- Bowen, Charles and David Peyton. *How to get the most out of CompuServe* (4c, 1989).
- Bowers, K., et. al. *Where To Start: a Bibliography of General Internet-working Information*, (1990). (An excellent bibliography that includes standard printed material as well as online material and directions for subscribing to various regional network electronic newsletters. Send mail to SERVICE@NIC.DDN.MIL and in the subject line, put **RFC 1175**; also available via anonymous FTP from [NIC.CERF.NET](ftp://NIC.CERF.NET) (132.249.21.201) in directory [cerfnet/cerf_info](ftp://cerfnet/cerf_info), file [wheretostartbib.txt](ftp://cerfnet/cerf_info/wheretostartbib.txt).)

General Information

- Cane, Mike. *The Computer Phone Book: Guide To Using Online Systems* (1986).

The Computer Phone Book: Directory Of Online Systems (1986). Both are dated, but have nuggets of good information.

- Comer, Douglas. *Internetworking With TCP/IP, Principles, Protocols, and Architecture*. (Prentice Hall, Englewood Cliffs, NJ 1988). A good theory book on TCP/IP.

- *Darwin Systems* is a list of IBM PC environment BBS's updated monthly. It is available on many BBSs around the country. On Simtel20 (WSMR-SIMTEL.ARMY.MIL), it is found in PD1:<MSDOS.BBSLISTS>USBBSXX.ZIP where XX is the number of the current version.

For example, send e-mail to LISTSERV@NDSUVM1 and in the body type /PDGET PD1:<MSDOS.BBSLISTSUSBBS75.ZIP. The server will send you the Aug 1990 listing (No. 75; check for the latest; how to check for the latest described in *Accessing the SIMTEL20 Archives From BITNET*). Besides NDSUVM1, LISTSERV@RPIECs will work.

Note this is a ".ZIP" file. This means it is compressed and must be unzipped on your computer before it is readable using the PKUNZIP program. Check with the Computing Center (565-2324) if you have questions on this.

A "server" is a machine on the "other end" of your computer connection. It "serves up" particular files you ask for if you ask for them in the correct format. A server is strictly mechanical and there is no human to interpret what you really mean if it is different from the language the server requires. "Listserv" (without the final "e") is a program that automates requests.

- Deward, Robert, Project Director. *Electronic Citizenship* (Pacific Bell, 1989). An excellent introduction to using computer communica-

tions for "community empowerment."

- *Directory of Online Databases*. (quarterly, Cuadra/elsevier) Expensive; check your local library.

- Dvorak, John C. and Nick Anis. *Dvorak's Guide to PC Telecommunications* (1989). Good introduction to BBSs; comes with two disks of shareware; also includes coupons for specials on software and registration which will pay for the book.

- Epler, Doris M. *Online Searching Goes to School* (1989).

- Frey, Donnalyne and Rick Adams. !%@:: *A Guide to Electronic Mail addressing and Networks* (O'Reilly & Associated, Inc. Sebastopol, CA 1990, 2e). Good directory.

- Gianone, Christine M. *Using MS-Kermit: Connecting Your PC to the Electronic World* (Digital Press, 1990). Essential if you use the Kermit communications program; an excellent example of good computer documentation.

- GLOBAL is a document that has names and one-line descriptions of all discussion lists running as listservs on BITNET. Send e-mail to your nearest backbone listserv and in the body type LIST GLOBAL. If you don't know your nearest backbone site, try sending mail to LISTSERV@NDSUVM1 with LIST GLOBAL in the body. This file currently is about 2000 lines long.

- Glossbrenner, Alfred. *The Complete Handbook of Personal Computer Communications* (3e, 1989). A little dated, but excellent and almost a classic—if the virtual community is old enough to have classics.

How to Look it Up Online (1987).

Alfred Glossbrenner's Master Guide to CompuServe (1987).

Alfred Glossbrenner's Master Guide to Free Software for IBMs and Compatible Computers (1988) This includes many special prices for joining various services.

- Hedrick, Charles L. *Introduction to The Internet Protocols* (Rutgers, 1987). Available via anonymous FTP from CS.RUTGERS.EDU in the runet directory. The file is called TCP-IP-INTRO.DOC (TCP-IP-INTRO.PS is the postscript version).
- Howes, Byron C. *Internet Addressing*. (1986) (Send mail to LISTSERV@BROWNVN, in body put GET INTERNET ADDRESSING HUMANIST.)
- Horvitz, Robert. "The Usenet underground," *Whole Earth Review* (Winter 1989), pp. 113-115.
- *Internet Resource Guide*, is a directory of information and research facilities available on The Internet. To get more information or subscribe, send an e-mail note to RESOURCE-GUIDE-REQUEST@NSC.NSF.NET. This is also available via anonymous FTP on NSC.NSF.NET.
- Jones, Paul. What is The Internet, (1990) (Send mail to LISTSERV@BROWNVN, in body put: GET INTERNET WHAT_IS HUMANIST.)
- Kelly, Kevin, ed. *Signal: Communications Tools for the Information Age* (1988). Excellent; not limited to electronic networks; in the tradition of Co-Evolution Quarterly/Whole Earth Review.
- Krol, G. *Hitchhikers Guide to The Internet* (University of Illinois, Urbana, 1989). (Send mail to SERVICE@NIC.DDN.MIL and in the subject line, type RFC 1118. Also available via anonymous FTP on the hosts NIC.DDN.MIL or SH.CS.NET — filename: RFC118.TXT) Somewhat technical, but a very good humorous introduction to the Internet.
- LaQuey, Tracy. *Users' Directory of Computer Networks* (1990 ed. is published by Digital Press. Parts of previous editions can be retrieved via FTP from emx.utexas.edu (128.83.1.33); the full 600+ pp. of the 1988 ed. can also be FTPed in six parts.)
- *Making Connections*. Academic Computing Services document.

Available from the Computing Center main office (ISB 119).

- Meeks, Brock N. "Overview of conferencing systems," *Byte* (Dec. 1985 [theme issue on computer conferencing]), pp. 169-192.
"Beefed-up Bulletin Boards," *Byte* (Fall 1988), pp. 45-8.
- Molta, Dave. "Compuserve/Internet Gateway Now Available," *Benchmarks: The University of North Texas Computing Center Newsletter* (January/February 1990, Vol.11, No. 1, pp. 2-3). (Gateway Molta-D)
- Mullet, Kevin. "LAN of the Free, Home of the Brave," *Benchmarks: The University of North Texas Computing Center Newsletter* (March 1989, Vol.10, No. 3, pp. 8-10). (LAN Mullet-K)
"The Secret Service, UUCP, and the Legion of Doom," *Benchmarks: The University of North Texas Computing Center Newsletter* (June 1990, Vol. 11, No. 4, pp. 10-15). Available via anonymous FTP from VAXB.ACS.UNT.EDU in the articles directory. (Mullet-K) (UUCP)
- Netnews. This is "the independent guide to BITNET," edited by Christopher Condon. It is an electronic monthly magazine. To subscribe, send e-mail to LISTSERV@MARIST and in the body, type SUBSCRIBE NETMONTH Your_real-name, replacing Your_real_name by your name—not your userid or account name.
- Neuwirth, Erich. *Short Guide to Networking and File Transmission*. Very good explanation of file transfer, especially UUENCODE/UUDECODE. For a copy, send e-mail to LISTSERV@NDSUVM1 (or RPIES) and in the body, type /PDGET PDI:<MSDOS.STARTER>TRANSGID.TXT. This is an ASCII file, so you may have to tell your computer. On an IBM mainframe, you might have to type TRANSLATE just after TRANSGID.TXT, e. g. . . . >TRANSGID.TXT TRANSLATE.
- Quarterman, John S. and Josiah C. Hoskins. "Notable Computer Networks," *Communications of the*

ACM (Oct. 1986), pp. 93271. Now, mainly of historical interest, but the classic piece on computer networks.

Quarterman, John S. *The Matrix: Computer Networks and Conferencing Systems Worldwide* (1990). The bible of computer networks and a necessity for anyone wanting a comprehensive view of computer communications.

- Rapaport, Matthew. *Computer Mediated Communications, Design and Implementation: Bulletin Boards, Information Retrieval, Computer Conferencing, and Electronic Mail* (forthcoming, early 1991 from John Wiley and Sons)
- Shapiro, Norman Z. and Robert H. Anderson. *Toward an Ethics and Etiquette for Electronic Mail* (1985) (Rand Corp. report R3283-NSF/RC) A lot of good ideas for making network communications more enjoyable and efficient.
- Spanbauer, Scott. "On-line Services and Data Bases," *PC World* (Oct. 1988), pp. 196-202.
- Spurgeon, Charles. *Network Manager's Reading List: TCP/IP, UNIX, and Ethernet* (1990). (Send mail to NETINFO@EMX.UTEXAS.EDU and in the body type SEND DOCS NETWORK-READING-LIST.TXT. For a Postscript copy, type SEND POSTSCRIPT NETWORK-READING-LIST.PS.) As the title implies, this is more technical and aimed at net managers.
- Stanford Research Institute, *List-of-Lists*. This is the most complete listing of discussion lists on Bitnet and The Internet. To get a copy, send mail to SERVICE@NIC.DDN.MIL and in the subject line put NETINFO INTEREST-GROUPS.TXT. This is a very large file and will be sent in several parts. Make sure your account has the space to receive it.
This listing is available on the VAXcluster as SYSSNETINFO: MAILING_LISTS.DOC

- *The Texas Higher Education Network*. Academic Computing Services document. Available from the Computing Center main office (ISB 119).
- Todino, Grace. *Using UUCP and Usenet* (1987).
- Updegrove, Daniel A. *Electronic Mail and Networks: New Tools for Institutional Research and University Planning*. (Send mail to LISTSERV@BITNIC; in body GET EMAILNET UPDEGR_D).
- Vallce, Jacques. *Computer Message Systems* (1984).
- Wood, Lamont and Dana Blankenhorn. "State of the BBS Nation," *Byte* (Jan. 1990), pp. 298, 300, 302, 304.
- Wallace, Jonathan D. and Rees W. Morrison. *Syslaw: The Sysop's legal Manual* (1988). ■

Talk About Student Government

This article originally appeared in *The Open Channel* newsletter (September 12, 1990) published by the Information Technology division of the University of Houston.

SGANet, developed and put to use at Virginia Tech, is a global electronic mail network for student government organizations. SGANet provides student governments with access to electronic mail discussions and a global directory of student governments.

With SGANet, users can hook up with regional discussion groups (as in SGANET-N for North America, -A for Asia and Australia, -E for Europe, and -S for South America).

Send an interactive message or mail to LISTSERV@VTVM1 to subscribe. ■

BBSs Available on the Internet

by Billy Barron, VAX/Unix Systems Manager (BILLY@VAXB.ACS.UNT.EDU)

Many BBS systems exist on the Internet and are accessible via TELNET. They vary greatly in functionality and amount of usage. Please keep in mind however that BBSs go up and down quite often so this list may quickly be obsolete. The TELNET command shown in this document must be executed on a system that is connected to the Internet (e.g. the VAXcluster here at UNT).

Quartz

Quartz is the largest and most successful of the Internet BBSs. It is run by Rutgers University and uses a BBS software package known as Citadel. Quartz has 100 different messaging areas on a wide variety of topics and also has a chat facility. To access it, do the following from the VAX/VMS system:

```
$ TELNET QUARTZ.RUTGERS.EDU
login: bbs
Terminal type [a la unix termcap]:
vt100
```

Freenet

Freenet is a BBS for the City of Cleveland and is run by Case Western Reserve University. Freenet contains message bases and Internet mail among its services. To access Freenet, do the following:

```
$ TELNET FRENET-IN-A.CWRU.EDU
```

Continued on page 15.

THE BITNET CONNECTION

By Philip Baczewski, BITNET INFOREP (BITNET: AC12@UNTVMI)

*This Column is a continuing feature of **Benchmarks** intended to present news and information on various aspects of the BITNET wide area network.*

You May Already be a Winner...

I'm sure we've heard that one before. You know: the envelop with the famous guy's picture on it entices you to buy magazines lured by the promise of a one-in-five-hundred-thousand chance to win that ten million dollars. I invariably wind up with just the magazines and the bills for the subscriptions.

Whether or not we are enticed by millions, most of us maintain subscriptions to from one to many periodical publications. It might be a daily newspaper, a weekly news magazine, a monthly special-interest magazine, or a scholarly journal published quarterly. Just as the periodical publication is a primary mainstay of paper-based communication, it is also becoming more and more a part of the electronic realm.

The list of electronic magazines published and distributed via BITNET has grown from just a handful several years ago to around twenty today. Their number seems to grow by the month. What follows is a selected list of electronic magazines published on BITNET, together with a description of each and instructions on how to subscribe. The complete list can be found in the file, BITNET.SERVERS, which is publicly available on MUSIC, the VAX, and on CMS.

Athene

Athene is a free network "magazine" devoted to amateur fiction written by the members of the on-line community. *Athene* does not limit itself to any specific genre, but will publish quality short stories dealing with just about any interesting topic, including:

science fiction	fantasy
religion	mystery
computers	humor
psychology	sports
politics	business

To subscribe, mail a request to Jim McCabe, MCCABE@MTUS5. Be sure to mention if you want it in ASCII or Postscript.

BioSphere Newsletter

BioSphere newsletter may be of interest for those of you concerned about the problems facing our environment. To get a subscription, send this command to LISTSERV@UBVM: SUB BIOSPH-L your_full_name. Back issues of the magazine are available from the server UMNEWS@MAINE (on the MAGAZINE disk).

DISTED

The On-Line Journal of Distance Education and Communication Special Interest Group has two primary concerns: First, it is concerned with distance education as the organized method of reaching geographically disadvantaged learners. Second, the Journal is interested in projects concerned with overcoming cultural barriers through the use of electronic communication. To subscribe, send the this command to `LISTSERV@UWAVM` via mail or message: `SUB DISTED your_full_name`

International Intercultural Newsletter

`XCULT-L` is an international intercultural newsletter written by undergraduate and graduate students at Penn State University who are enrolled in Speech Communication 497B: Cross-cultural Communication. Each week, students write on a topic being discussed in class. Topics range from non-dominant cultures in the U.S. to corporate cultures to the use nonverbal communication in international communication. Participants who receive the newsletter are encouraged to join in the discussions or contribute their own topics and issues. You can subscribe to `XCULT-L` by sending the command `SUB XCULT-L first-name lastname` to `LISTSERV@PSUVM`.

Mednews

Mednews is a weekly electronic newsletter. Regular columns consist of medical news summary from USA Today, Center For Disease Control MMWR, weekly AIDS Statistics from the CDC, plus other interesting medical news items. To subscribe, send the following command to `LISTSERV@ASUACAD` via mail or

LIST of the Month

Each month we will highlight one of the BITNET LISTSERV Special Interest Group (SIG) mailing lists. This month's list...

WRITERS on `LISTSERV@NDSUVM1`

`WRITERS` is an on-line discussion group comprised of professional writers and those who aspire to be writers. Discussions will center around the art, craft, and business of writing. We hope to keep members informed about new and varied opportunities for writers. We welcome suggestions from members as to other directions `WRITERS` might take.

What better list for a "communications" issue than one devoted to the discussion of writing. If you wish to be included in the discussion, send the following command via an interactive message or mail message to `LISTSERV@NDSUVM1`:

SUBSCRIBE WRITERS first-name last-name

where first-name is your first name and last-name is your last name.

message: `SUB MEDNEWS Your_Full_Name`.

NetMonth

`NetMonth` is an on-line magazine featuring news, information, and opinion about BITNET. Inside each issue you will find features, columns, and regular departments covering a variety of network-related topics. The purpose of `NetMonth` is to inform the BITNET community while providing practical guidelines for getting the most out of the network. In order to subscribe, send the following command to `LISTSERV`

`@MARIST: SUB NETMONTH your_full_name`.

Network Audio Bits

Network Audio Bits and Audio Software Review is an electronic audio magazine devoted primarily to Compact Disc and Vinyl LP Record reviews. Subscriptions are available by sending mail to `MURPH@MAINE`. Back issues are available from `UMNEWS@MAINE` (EMAGS disk).

Postmodern Culture

Postmodern Culture is a peer-reviewed electronic journal

General Information

which provides an international and interdisciplinary forum for discussing contemporary literature, theory, and culture. It emphasizes open debate and intellectual engagement: readers may respond to essays and their comments will be made available to the authors and to other readers. Postmodern Culture does not promote any one definition of the term "postmodernism," nor does it advance any one framework for debate; on the contrary, it encourages critical and ideological diversity, solicits dissent, and invites the participation of those outside the usual boundaries of the discussion of postmodernism. For more information or a subscription, send mail to PMC@NCSUVM.

The Public-Access Computer Systems Review

An electronic journal, the Public-Access Computer Systems Review, has been established on the Public-Access Computer Systems Forum (PACS-L@UHUPVM1). The PACS Review will cover all computer systems that libraries make available to their patrons, including CAI and ICAI programs, CD-ROM databases, expert systems, hypermedia systems, information delivery systems, local databases, on-line catalogs, remote end-user search systems, and other systems. To join the PACS Forum, send the following command to LISTSERV@UHUPVM1 via mail or message: SUBSCRIBE PACS-L Your_full_name

SCUP Newsletter

SCUP is a newsletter for people interested in college and university planning. For a subscription send mail to SCUP@TUFTS. ■

BBS' continued from page 12.

The first time you are on, log in as a visitor. Then apply for an account. You will later receive your account in the US mail.

UNC

The University of North Carolina has an Internet BBS. It has a message base, Usenet access, and Internet mail among its features. To access:

\$ TELNET SAMBA.ACS.UNC.EDU
login: bbs

The Mars Hotel

The Mars Hotel is a BBS system at Mississippi State University. It has a nice user interface, message base, chat facility, mail, and file transfers. Unfortunately, response between UNT and the Mars Hotel typically is very slow. To use the Mars Hotel:

\$ TELNET MARS.EE.MSSTATE.EDU
login: bbs

Cseg BBS

The CSEG BBS is run by the University of Arkansas. Its features include a message base, Internet Relay Chat (IRC), Usenet access, and Downloads. Be warned that network access from UNT to the University of Arkansas is very slow.

\$ TELNET UAFCSeg.UARK.EDU
login: bbs

Picayune

Picayune is a BBS run by North Dakota State University. It has a message base and downloads available. Be warned that network access from UNT to NDSU is very slow.

\$ TELNET STAR96.NODAK.EDU
Enter service class: 20

Oulu Box

The University of Oulu in Finland runs the Oulu Box BBS. It has a message base and file transfers. However, much of the material is in Finnish.

\$ TELNET TOLSON.OULU.FI
login: bbs ■



The Computing Center is offering the following short courses for the fall 1990 semester. Please pre-register to attend (a registration form can be found at the end of this issue). A maximum of 10 people will be admitted to each of the courses held in ISB 110. A maximum of 7 people will be admitted to each of the courses held in the Graphics Lab. A maximum of 8 people will be admitted to each of the courses held in ISB 123.

PLEASE NOTE: Faculty and students have first priority to register for these classes.

MAINFRAME COURSES

- 1. Introduction to MUSIC/SP :** Introductory sessions to MUSIC/SP will be held in Room 110 of the Science Library (ISB) on a bi-weekly basis. **NO PRE-REGISTRATION IS REQUIRED FOR THESE COURSES.** Consult the HELP DESK (565-4050) for a schedule of classes and/or to request a class on a specific day. All courses will be taught by Help Desk staff.
- 2. Introduction to IBM Job Control Language:**
A two-hour session to be held in the Academic Computing Conference Room (ISB 123):
 - Monday, October 15: 5:30-7:30 p.m. Instructor: Cathy Hardy
- 3. Introduction to SAS:**
Two separate three-hour sessions to be held in the Science Library (ISB 110):
 - Friday, October 5: 1:00-4:00 p.m. Instructor: Panu Sittiwong
 - Thursday, November 1: 2:00-5:00 p.m. Instructor: Panu Sittiwong
- 4. Introduction to SPSS-X:**
A two-hour session to be held in the Academic Computing Conference Room (ISB 123):

- Thursday, October 4: 3:00-5:00 p.m. Instructor: Panu Sittiwong

5. Introduction to CMS:

Three two-hour sessions to be held in the Science Library (ISB 110). Additional courses may be scheduled through the HELP Desk, just as with the MUSIC/SP courses:

- Tuesday, October 2: 3:00-5:00 p.m. Instructor: Philip Baczewski
- Monday, October 8: 3:00-5:00 p.m. Instructor: Philip Baczewski
- Monday, October 29: 5:30-7:30 p.m. Instructor: Cathy Hardy

6. Introduction to BITNET:

A two-hour session to be held in the Academic Computing Conference Room (ISB 123):

- Thursday, October 11: 3:00-5:00 p.m. Instructor: Philip Baczewski

MICROCOMPUTER COURSES

1. Introduction to Microsoft Word:

A two and 1/2 hour session to be held in the Graphics Lab (ISB 6):

- Wednesday, October 17: 1:00-3:30 p.m. Instructor: Pro Systems Staff

2. Advanced Microsoft Word:

A two and 1/2 hour sessions to be held in the Graphics Lab (ISB 6):

- Friday, October 26: 1:00-3:30 p.m. Instructor: Pro Systems Staff

3. Introduction to Hypercard:

A two and 1/2 hour session to be held in the Graphics Lab (ISB 6):

General Information

- Wednesday, October 3: 1:30-3:30 p.m. Instructor: Pro Systems Staff
- 4. **Introduction to WordPerfect 5.1:**
A three-hour session to be held in the Science Library (ISB 110):
 - Friday, October 12: 1:00-4:00 p.m. Instructor: Sandy Franklin
- 5. **Introduction to Electronic Spread Sheets:**
A two-hour sessions to be held in the Science Library (ISB 110):
 - Tuesday, October 23: 3:00-5:00 p.m. Instructor: Staff
- 6. **Introduction to Procomm+:**
A one-hour session to be held in the Academic Computing Conference Room (ISB 123):
 - Monday, October 1: 1:00-2:00 p.m. Instructor: Staff
- 7. **Introduction to SAS PC:**
A three-hour session to be held in the Science Library (ISB 110):
 - Monday, October 22: 2:00-5:00 p.m. Instructor: Panu Sittiwong ■



BENCHMARKS FORUM

BENCHMARKS FORUM is intended to serve as a vehicle for answering questions that may be of general interest to the user community. If you have a question, please send electronic mail to the Benchmarks editor (BITNET: AS04@UNTVM1) or write it down and drop it by the Computing Center. We will try to answer it in the next issue.

Question: What is Anonymous FTP?

Answer: FTP stands for File Transfer Protocol. It is a system that works over the Internet to allow files to be shared. The military supports a massive MS-DOS database of information, data and programs, which are either shareware or public domain. Stanford University supports a similar system for the Macintosh. If you have Internet access (from the VAXcluster, for example), you can "FTP" to a site (such as WSMR-SIMTEL20.ARMY.MIL), login as a user called "ANONYMOUS" — the password is "your local User-ID." You can then use commands to "GET" files. Thousands of files are available. WSMR-SIMTEL20.ARMY.MIL is pretty busy, so you might try UWARCHIVE.WUSTL.EDU — the same files are kept on both systems. ■

Benchmarks Reader/User feedback is encouraged. Send all letters, suggestions, etc to (AS04@UNTVM1), FAX 817-565-4060 or to the Benchmarks Editor at:

**Academic Computing Services
University of North Texas
Computing Center
NT Station,
Box 13495
Denton, Texas 76203**



Staff Activities

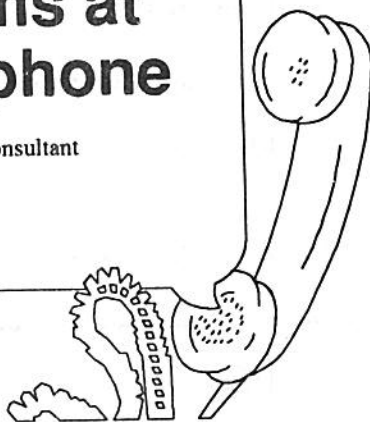
- **Professional Activities.** Dave Molta, Director of Academic Computing Services, served as moderator for a seminar entitled **Using TCP/IP for Interconnection** at the NetWorld networking conference held at the Dallas Convention Center in September. In addition to the seminar, Molta presented a half-day tutorial, with David Boeshaar of Syracuse University, entitled **Networks in Higher Education**. Molta was also chosen to be a member of the 1991 NetWorld Advisory Board.
- **New Employees.** We are happy to report that the following have come to work in the Computing Center since May:

• Cheng (Grace) Chang — Part-Time, Help Desk	• Richard Baker — Part-Time, Graphics Lab
• Federico Campos — Part-Time, Tape Librarian	• Amos Gouaux — Part-Time, VAX Operator
• Painai Bahram — Part-Time, Help Desk	• Tanya Anderson — Part-Time, Microcomputer Support
• Brian Divers — Part-Time, Microcomputer Support	• Mike Murdock — Voice Response Team
• Meng Long Wong — HRMIS Team	• Michael Kelly — HRMIS Team
• Cong Ong — Part-Time, I/O consultant	• Betsy Mattucci — Data Entry Operator
• Jana Crews — DB/CPST Team	
- **Employee Departures.** Unfortunately, many of the above employees are here because of employee departures. The following people have left the Computing Center since May:

• Smarom Komalvanij — Help Desk	• Kam Mak — Help Desk
• Kurt Grutzmacher — Microcomputer Support	• Chad Irby — Microcomputer Support
• Teresa Reeves — Microcomputer Support	• Shawn Brown — HRMIS Team
• Jim Jones — Production Support Team	• Scott Norton — General Systems

Connecting Microcomputers to Host Systems at UNT via Telephone

By Panu Sittiwong, Academic Computing Consultant
(BITNET:AC09@UNTVM1)



*This is a revised version of an article, "Connecting Your Microcomputer to the Mainframe System at UNT Via Telephone," that appeared in the July/August 1989 issue of **Benchmarks**. An expanded version of this article exists as a handout called "Connecting PCs to Host Computers at UNT." It is available in the Computing Center main office (ISB 110).*

One reason that you might buy a microcomputer is to use it as a smart terminal to connect to a host computer system at UNT (i.e. Vax, HDS 8083, or Unix host). By doing this, you can finish your projects from home. Using your microcomputer to connect to a UNT host is a good idea and is encouraged by the Computing Center. In order to take advantage of dialup facilities, it is necessary to understand some concepts of telecommunications. This article will present that information so you can connect your microcomputer to host systems at UNT.

Basic Requirements

Some specialized hardware and software is required before you can connect your microcomputer to a host. Since the connection will be done through the telephone system, you will need to equip your microcomputer with a modem. Currently, our system supports communication rates from 300 to 9600 baud. Therefore, you have wide range of choice concerning the modem you want to purchase. One consideration when purchasing a modem is whether or not a particular modem is compatible with a Hayes Smartmodem (a defacto standard for microcomputer modems). Caution has to be taken, however, since not all Hayes-compatible modems are 100 % compatible. This may not be a serious problem depending upon your application.

If you buy an external modem, your microcomputer must be equipped with an Asynchronous Communication Interface (a serial port). Most microcomputers now on the market will have this port built in. If your microcomputer does not have this port, it is a good idea to buy a multifunction board which, in addition to providing a serial port, also provides a parallel printer port, memory expansion sockets, etc. Most asynchronous communication interfaces conform to a standard known as RS-232C and use a standard DB-25 plug for connection. An external modem, then,

will connect to the serial port via a ribbon cable. Internal modems, on the other hand, have a serial port built in and do not require an additional serial port.

Software Requirements

In addition to the hardware requirements, you will need to acquire communications software. Currently, Academic Computing Services distributes three communication software packages—Procomm, PCWS, and MS-Kermit—to UNT faculty, staff and students free of charge. All three packages can be used with any IBM or IBM-compatible PC. Kermit is also available for Macintosh users. To obtain Procomm, PCWS, or MS-Kermit, you need to bring either a 5 1/4" 360k or 3 1/2" 720k diskette to the Computer lab located in room 110 of the Information Science Library. The diskette that will contain the software **MUST** be formatted and have no files on it. You will need one diskette for each software package. Kermit for the Macintosh can be obtained from room 110 in the Information Science Library. Again you will need to bring one 3 1/2" diskette.

Selecting the Appropriate Software

All the communications software available from Academic Computing Services are fully supported by the Academic Computing Staff and they can be used with all host systems at UNT. However, each package may be more suitable for one particular operating system and application.

- **Procomm:** Procomm can be used to communicate with all the host systems available at UNT. It is a package which provides a variety of functions which make it more user friendly. Some of those functions include automatic dialing, a dialing directory, and extensive support of script files. A disadvantage is its in-

ability to emulate a graphics terminal, which makes Procomm undesirable if you want to use SAS/GRAPH on VM/CMS or DIS-SPLA on VAX/VMS.

- **MS-Kermit:** MS-Kermit can be used with all the host systems available at UNT via the dial-up lines. A major advantage of MS-Kermit is its ability to emulate a Tektronics 4010 Graphics terminal. This feature will allow you to look at the graphic output from either SAS/GRAPH or DISSPLA on your terminal. Therefore, we recommend MS-Kermit if you plan to use these graphics applications at UNT. One disadvantage is that it does not support an extensive script language which may make it more difficult to customize your connection. To help ease this problem, Academic Computing Services distributes MS-Kermit along with appropriate script files for connecting to the HDS 8083 IBM-compatible mainframe and to the VAXcluster.

- **PCWS:** PCWS is a program which is designed specifically to be used with the MUSIC/SP operating system. Hence, it provides a variety of functions and commands which make it more user friendly in the MUSIC/SP environment. For example, file transfer to and from MUSIC/SP is done with a single MUSIC/SP command. Therefore, we recommend PCWS if you plan to connect to the MUSIC/SP operating system.

Making Connections

Before you can connect to any of the host systems at UNT you need to configure the communications software as appropriate for particular host system you wish to use. The following table shows the essential parameters for each operating system based on the communication software.

Host Operating Systems at UNT

Software	MUSIC via 8040	MUSIC, CMS via 3270	VAX HP-3000	NBI Sequent
Procomm				
Word Length	7	7	8	7 ¹
Mwop Bits	1	1	1	1
Parity	even	even	none	even ²
Flow Control	none	xon/xoff	xon/xoff	xon/xoff
Handshaking	17	0	0	0
Kermit				
Parity	even	even	none	none
Flow Control	xon/xoff	xon/xoff	xon/xoff	xon/xoff
Handshaking	none	none	none	none
PCWS				
Word Length	8	n/a	n/a	n/a
Stop Bits	1	n/a	n/a	n/a
Parity	none	n/a	n/a	n/a

¹ Needs to be changed to 8 when uploading and downloading files to and from the host system.

² Needs to be changed to none when uploading and downloading files to and from the host system.

After the above parameters are set to the appropriate values, you will also need to set the baud rate to correspond to your modem speed. Now you are in position to make the connection to the system you want by dialing the appropriate number. All the dial-up numbers, both local Denton numbers and the Metro numbers are provided below.

Local Denton Numbers:

300/1200 BAUD	(817) 565-3499
300/2400 BAUD	(817) 565-3300 ¹
300-9600 BAUD	(817) 565-3461 ²

D/FW METRO Numbers:

300-9600 BAUD	429-6006,
	429-9314

Area code 214 must dial 817 before the METRO number.

When the telephone connection is established, you can connect to the Local Area Network (LAN). You will need to press the "Enter" key several times in order to have the modem on the LAN determine your modem speed. When the matching speed is established you will receive a # sign on your screen. You are then connected to the LAN at UNT. At this point, enter one of the following CALL commands to connect with the computer of your choice.

CALL 8040 connects with the HDS/8083 (supports line editing or PCWS). Only the MUSIC/SP Operating system is available.

¹ These modems also support the mnp class 5 protocol.

² 9600 BAUD can be achieved only if you use a US Robotics 9600 BAUD Courier HST modem.

CALL 3270 connects with the HDS/8083 through a 3270 protocol converter (supports full-screen editing). Operating systems include MUSIC/SP, VM/CMS, COMPLETE.

CALL DEC connects with the VAX.

CALL 3000 connects with the Libraries' On-line Bibliographic data base.

CALL 780 connects with the Sequent (UNIX).

CALL 6800 connects with the NBI (UNIX).

After the session is established, you will follow the normal procedure to log-on to the system of your choice.

File Transfer Between Your PC and the Host System.

One advantage of using your PC to connect to the hosts at UNT is its ability to exchange files between the two. This means that you can develop your program using text processing on your PC and uploaded it to the host for execution. The following steps show how you can upload—take a copy of your file from the PC to the host—and download—take a copy of your file from host to your PC.

Information presented in this section will cover only MUSIC/SP, VM/CMS on the HDS-8083 and VMS on the VAXcluster. The SEQUENT and the NBI are administered by Computer Sciences Department. Hence, questions concerning file transfers on those systems should be directed to Computer Sciences Department.

- **Uploading Files:**³ The following tables show all the commands for uploading a file from your PC to the Host system. All the commands you entering are in *lower-case italic* while the system prompts are in **BOLD UPPER-CASE**. Tables are organized by the type of software and the host system you are using.

³ The MUSIC/SP Command XTMUS *filename* can be used if you are using PCWS.

PC to Host File Transfer — Uploading

Host System	Procomm	MS-Kermit
MUSIC/SP	*GO <i>kermit</i> KERMIT-MUSIC> <i>receive</i> KERMIT-MUSIC> Press the <PageUp> Key on the Key board and select KERMIT from the menu. Procomm will prompt you to enter the name of the file that you want to upload. Enter the file name and press <ENTER>. Procomm will show the File Transfer Status screen. After the file transfer is done, you will get back to the KERMIT-MUSIC> Prompt. Type <i>exit</i> to return to MUSIC *GO mode.	*GO <i>kermit</i> KERMIT-MUSIC> <i>receive</i> KERMIT-MUSIC> Press <X> while holding down the <ALT> Key on the Keyboard. MS-KERMIT> <i>send filename.ext</i> <ENTER> MS-Kermit will show the File Transfer Status screen. After the file transfer is done, you will get back to the MS-KERMIT> Prompt. Type <i>connect</i> to return to MUSIC Kermit. KERMIT-MUSIC> <i>exit</i> *GO
VM/CMS	Ready; <i>kermit</i> KERMIT-CMS> <i>receive</i> KERMIT-CMS READY TO RECEIVE. PLEASE ESCAPE TO.... Press the <PageUp> Key on the Keyboard and select KERMIT from the menu. Procomm will prompt you to enter the name of the file that you want to upload. Enter the file name and press <ENTER>. Procomm will show the File Transfer Status screen. After the file transfer is done, you will get back to the KERMIT-CMS> Prompt. Type <i>exit</i> to return to CMS.	Ready; <i>kermit</i> KERMIT-CMS> <i>receive</i> KERMIT-CMS READY TO RECEIVE. PLEASE ESCAPE TO... Press <X> while holding down the <ALT> Key on the Key board. MS-KERMIT> <i>send filename.ext</i> <ENTER> MS-Kermit will show the File Transfer Status screen. After the file transfer is done, you will get back to the MS-KERMIT Prompt. Type <i>connect</i> to return to CMS Kermit. KERMIT-CMS <i>exit</i> Ready;

PC to Host File Transfer — Uploading

Host System	Procomm	MS-Kermit
VAX/VMS	\$ <i>kermit</i> KERMIT-32> <i>receive</i> KERMIT-32> Press the <PageUp> Key on the Keyboard and select KERMIT from the menu. Procomm will prompt you to enter the name of the file that you want to upload. Enter the filename and press <ENTER>. Procomm will show the File Transfer Status screen. After the file transfer is done, you will get back to the KERMIT-32> Prompt. Type <i>exit</i> to return to the VAX/VMS \$ prompt.	\$ <i>kermit</i> KERMIT-32> <i>receive</i> KERMIT-MUSIC> Press <X> while holding down the <ALT> Key on the Keyboard. MS-KERMIT> <i>send filename.ext</i> <ENTER> MS-Kermit will show the File Transfer Status screen. After the file transfer is done, you will get back to the MS-KERMIT> Prompt. Type <i>connect</i> to return to VAX Kermit. KERMIT-32> <i>exit</i> \$

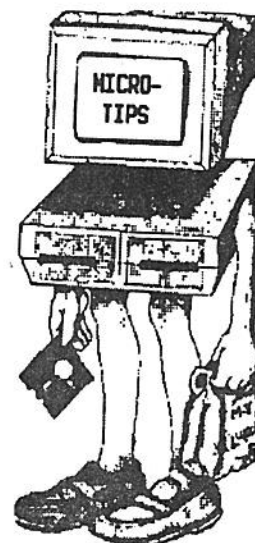
- **Downloading Files⁴:** The tables on the following pages show all the commands for downloading a file from your PC to the Host system. All the commands you enter are in *lower-case italic* while the system prompts are in **BOLD UPPER-CASE**. Tables are organized by the type of software and the host system you are using.

⁴Note that the MUSIC/SP command *XTPC filename* can be used if you are using PCWS.

Tables Continued on page 20 & 21

AppleSEED Project Fair Scheduled

AppleSeed (Society to Exchange Exciting Discoveries) is an association of academic and industrial users. A Project Fair Seminar for AppleSeed is being hosted by Apple Computer Inc. on October 23, 1990 at the Infomart, Dallas, Tx. The fair will consist of short presentations from over 15 guest speakers on various projects using Apple products. You will have the opportunity to visit with each presenter and learn more about their projects. To register, and for more information, contact Jennifer Hayes, Apple Computer, Inc., 12770 Merit Drive, Suite 1000, Dallas, Texas 75251 (214/770/4827-HAYES2). There is a \$25 registration fee, payable at the door. ■



This column is intended to serve as a forum for sharing useful tips on making more productive use of microcomputers. If you have a tip that you feel may be of use to campus users, submit it to the Benchmarks editor for possible inclusion in a future issue.

Transferring Data Overseas

This is modified from an article, "Transferring Data Overseas" that appeared in the "Ask Dr. Micro" column of the September 1990 issue of the Berkley Computing Bulletin (Volume 3, Number 9).

Question: I want to exchange data with a colleague overseas who also has a personal computer. Is there any alternative to mailing floppy disks back and forth?

AnsWER: It may very well be possible to exchange data more directly. You asked a short question. Unfortunately, I'll have to give you a long answer. Agreeing beforehand with your colleague on procedures can save everyone a great deal of aggravation.

Is your software compatible? The data or program files you send must be in a usable form for the destination

machine. If you send data that is in a non-text or binary format, the person on the other end needs to have the program you are using (or a program that reads that specific file format) to even view or print your data. A common mistake is to send spreadsheet files to someone who does not have the same spreadsheet program. If you do run the same programs, check the version numbers and whether the versions produce compatible files.

Find a common data format. If you are not using the same software package, check to see if your programs will read a common data file format. For example, most PC spreadsheet programs can read Lotus 1-2-3 spreadsheet files, and most Macintosh word processing programs can read MacWrite document files. Also, nearly all applications have some way of writing an ASCII or plain text file. Using plain text files means that formatting of text, such as font changes, is lost. Formatting is probably not useful for raw data files, but might be crucial for a final review of a publication. Before shipping an ASCII database or spreadsheet file, ask the receiver if fields should be separated by tabs, commas, spaces, or some other specific character.

Electronic transfer. It is possible to exchange files directly with many parts of the world from the UNT campus. Although this can be done with modems and phone calls between machines, it is probably simpler and less expensive to use the campus network and its connection to other networks. The UNT campus is connected to networks that are linked to universities in many parts of the world. If you and your colleague are at sites connected to the BITNET or Internet networks, you can move your files quickly via electronic mail. More direct file transfer over the networks may be possible, but electronic mail is the most common way to get files to far-flung personal computers.

Both you and your remote colleague need electronic mail accounts. At UNT, the Wide Area Network (WAN)

PC to Host File Transfer — Downloading

Host System	Procomm	MS-Kermit
MUSIC/SP	*GO <i>kermit</i> KERMIT-MUSIC> <i>send filename</i> KERMIT-MUSIC> Press the <PageDown> Key on the Keyboard and select KERMIT from the menu. Procomm will show the File Transfer Status screen. After the file transfer is done, you will get back to the KERMIT-MUSIC> Prompt. Type <i>exit</i> to return to MUSIC *GO mode.	*GO <i>kermit</i> KERMIT-MUSIC> <i>send filename</i> KERMIT-MUSIC> Press <X> while holding down the <ALT> Key on the Key board. MS-KERMIT> <i>receive</i> MS-Kermit will show the File Transfer Status screen. After the file transfer is done, you will get back to the MS-KERMIT> Prompt. Type <i>connect</i> to return to MUSIC Kermit. KERMIT-MUSIC> <i>exit</i> *GO
VM/CMS	Ready; <i>kermit</i> KERMIT-CMS> <i>send filename filetype filemode</i> KERMIT-CMS READY TO SEND. PLEASE ESCAPE TO... Press the <PageDown> Key on the Keyboard and select KERMIT from the menu. Procomm will show the File Transfer Status screen. After the file transfer is done, you will get back to the KERMIT-CMS> Prompt. Type <i>exit</i> to return to CMS.	Ready; <i>kermit</i> KERMIT-CMS> <i>send filename filetype filemode</i> KERMIT-CMS READY TO SEND. PLEASE ESCAPE TO... Press <X> while holding down the <ALT> Key on the Keyboard. MS-KERMIT> <i>receive</i> MS-Kermit will show the File Transfer Status screen. After the file transfer is done, you will get back to the MS-KERMIT Prompt. Type <i>connect</i> to return to CMS Kermit. KERMIT-CMS <i>exit</i> Ready;

PC to Host File Transfer — Downloading

Host System	Procomm	MS-Kermit
VAX/VMS	\$ <i>kermit</i> KERMIT-32> <i>send filename.ext</i> KERMIT-32> Press the <PageDown> Key on the Keyboard and select KERMIT from the menu. Procomm will show the File Transfer Status screen. After the file transfer is done, you will get back to the KERMIT-32> Prompt. Type <i>exit</i> to return to the VAX/VMS \$ prompt.	\$ <i>kermit</i> KERMIT-32> <i>send filename.ext</i> KERMIT-MUSIC> Press <X> while holding down the <ALT> Key on the Keyboard. MS-KERMIT> <i>receive</i> MS-Kermit will show the File Transfer Status screen. After the file transfer is done, you will get back to the MS-KERMIT> Prompt. Type <i>connect</i> to return to VAX Kermit. KERMIT-32> <i>exit</i> \$

electronic mail software runs on campus host systems, rather than directly on your personal computer. You will both need ways to move files between your personal computers and the VAX/VMS, MUSIC, or CMS systems.

Creating files for electronic mail. Files must be in plain text form for electronic mail over BITNET or the Internet, or they may become garbled in transmission. Binary files also can be sent, but they need to be encoded first. There are limitations on the size of files that can be mailed through some mail connections. Break down large files into pieces smaller than 100 kilobytes (KB) before mailing.

If you are sending ASCII text files, put them into a reasonable form yourself. Mailing will be most reliable if you create files with hard returns and line lengths no longer than 80 characters.

Programs that encode binary files will do this automatically.

Preparing binary files on your Macintosh for sending via electronic mail. For the Macintosh, the BinHex format is commonly used to encode binary files in ASCII form for mailing. Freely distributable programs, such as Stuffit or BinHex 4.0, can be used to convert your files to this format. These same programs are used on the receiving end to convert the files back to usable form. Stuffit and BinHex 4.0 are available in the Computing Center Graphics Lab (ISB 6).

Preparing binary files on your DOS PC for sending via electronic mail. For MS-Dos and PC-Dos machines, there are freely distributable programs that use the "uuencode" format to translate binary files to an ASCII form that can be sent via electronic mail. The same program, or sometimes a separate

"uudecode" program, is run on the destination PC to convert the files back to a usable form. XXENCODE, which performs both of these functions, is available from the BBS on the VAXcluster in the IBM.Utility area.

Mailing the file. In order to mail a file via BITNET or the Internet, you will need to move the file to your host account using a file transfer program such as Procomm, Kermit, or ftp. You can make additional changes to the format of plain text files on the mainframe, but don't change encoded files.

Encoded files consist only of printable characters, but contain no information that makes the recognizable to people. When you send encoded binary files, include a header that indicates exactly what is being sent, but clearly delineates the header from the file itself. A standard way to do this is to put lines such as the following before the file:

The following Microsoft Word 4.0 file was encoded in BinHex 4.0 format using Stuffit

—————Cut Here—————

Mailing files from CMS. To mail an encoded file from CMS it is preferable to use the MAIL command. (The SENDFILE command may alter the file in a way that will make it impossible to decode.) The command **MAIL <dest id> (FILE <CMS filename>** will invoke the mail program and include the specified CMS file as the mail test. PF5 will send the message. Type **HELP MAIL** for more information.

Mailing files from VAX/VMS. To mail a file from VMS, type MAIL and then, at the MAIL> prompt, type SEND and the file name.

Mailing files from MUSIC/SP. To mail an encoded file from MUSIC, type MAIL and proceed as you normally would to send a message, however put the name of the encoded file in the "input file" field. Continue sending your mail in the usual manner.

Mailing files from UNIX. On UNIX, use the **mail** command to send your file. You can add comments and files to a message by using **~v** or **~r** commands within **mail**. For explanations of these commands, type **~?** at the start of a line while entering your mail message.

Receiving files. On the receiving end, the file is delivered as electronic mail to the recipient's electronic mail account. The headers should be deleted before an encoded file is downloaded to a personal computer from a mail account on a mainframe. The recipient then runs the corresponding decoding program in the personal computer.

Caveat. The most common encoding programs produce files that can be sent reliably over the Internet but may become garbled in some parts of BITNET. If you experience difficulty transferring files in this way, contact Academic Computing Services (565-2324).

This may sound complicated, but it allows for very fast and reliable transfer of files with formatting intact to many places in the world. ■

Interview with Cliff Stoll to be Broadcast on PBS

According to *KERA/KDNT Dial Magazine*, "The KGB, the Computer and Me," an interview with Clifford Stoll, will be the subject of a NOVA broadcast on Channel 13 three times during October:

- Tuesday, October 2 at 8 p.m.
- Friday, October 5 at 2 p.m.
- Monday, October 8 at 11 p.m.

Stoll is the author of the best-selling book, *The Cuckoo's Egg* that chronicles his investigation of a data thief through a maze of military and research computers. ■



Computer Trojans and Viruses in the '90s

The following viruses have been reported on campus or have been circulating throughout the country in 1990, so be on the lookout . . . Virus detection, eradication, and protection software is available from a variety of sources, including the UNT BBS (on the VAXcluster), the ISB 110 Lab and the Graphics Lab. Practice safe computing. Make frequent backups, especially BEFORE you install new software (even if it is shrink-wrapped).

- **Aids Information Virus (DOS):** purports to contain information about aids. If you see a diskette with a flier describing it as "Aids Information — an Introductory Diskette" and stating it is from PC Cyborg Corporation, don't use it. When it is installed with the **INSTALL** program that comes with it, an invoice will print out. After that, the system will self-destruct whenever it is rebooted from the hard disk.
- **Disk Killer Virus (DOS):** infects the boot sectors of floppy diskettes and hard disks, corrupts data files, and ruin overlay files. Both Norton Utilities and McAfee Associates **SCAN** detect this virus. McAfee Associates also distribute a disinfectant for DOS computers called "**MDISK**" which effectively eradicates the Disk Killer.
- **Turkey Trojan (VAX/VMS, UNIX/ULTRIX):** was released onto the Internet during the first part of 1990. It is a command file that claims to draw a turkey if executed. However, once activated, it deletes all unprotected files.
- **SCAN.EXE (Version 65) (DOS):** is NOT a version of John McAfee's PC-Anti-virus. It is a destructive Trojan horse program. Do not run this!
- **Stoned Virus (DOS):** attacks the Partition Table on DOS microcomputers. It is detectable with the latest versions of **SCANRES** and **CLEAN**.
- **WDEF Virus (MAC):** comes in two flavors, "A" and "B." It infects Macintosh microcomputers and can be detected with Gatekeeper and Gatekeeper Aid virus detection and eradication software.
- **ZUC (Zucchini) Virus (MAC):** is named after the Italian programmer who discovered it (Don Zucchini). It does not infect system or data files, only applications (whether running or not). About 90 seconds after an infected application is started, the cursor begins to behave erratically — moving diagonally across the screen, changing directions, and bouncing like a billiard ball when it touches the edge of the screen. The cursor stops moving when the mouse button is released. Except for this unusual cursor behavior, ZUC does no damage.

VirusDetective 4.0 detects ZUC and Disinfectant 1.7 locates and eradicates it. Vaccine is not effective against it, although Gatekeeper 1.1.1 is.

Some of the information in this article came from "Computer Viruses Reported During Winter-Spring 1990," by Ivars Balkis (BITNET: ISBALKITS@UCDAVIS). It was published in the Summer 1990 issue of Turn-Around Times, a University of California at Davis Computing Services publication. ■

Computer Sales Held Monthly

By Kevin Mullet, Communications Consultant (BITNET:SNMS4@UNTVAX)

Almost everyone has heard of the midnight computer sale held once a month in Dallas, but not very many people seem to know offhand where it is. I just found out about two such periodic events, so here's the info. I thought y'all might be interested.

The 75 & Ross Ave Sale

Beginning at midnight, on the Friday before the 1st Saturday of each month, there's a outdoor sale by the overpass at 75 & Ross Ave. My source tells me it's best to get there at midnight with a flashlight. Other sources tell me that the midnite stuff is occasionally, well, slightly warm. This affair started out as a salvage sale for amateur radio enthusiasts, and gravitated toward computers. You may be able find both kinds of items there. The vendors range from a person who has one thing to unload... uh... sell to mom & pop electronic shops.

The Infomart Sale

Usually held on the 2nd Saturday of each month in the underground parking garage at Infomart, the vendors at this sale are companies rather than individuals. Sometimes it gets bumped to a different date. Call first to make sure. It usually lasts from about 9:00 a.m. to 1:00 or 2:00 p.m. As with the Ross Ave sale, best pickin's to those who arrive early. ■

Computer Terminology: Real World Definitions

Reprinted from the Clemson University Computing Center publication, DICT Update (January 1990).

- **Advanced User:** A person who has managed to remove a computer from its packing materials.
- **Power User:** A person who has mastered the brightness and contrast controls on any computer monitor.
- **American-Made:** Assembled in America from parts made abroad.
- **Alpha Test Version:** Too buggy to be released to the paying public.
- **Beta Test Version:** Still too buggy to be released.
- **Release Version:** Alternate pronunciation of "beta test version."
- **Sales Manager:** Last week's new sales associate.
- **Consultant:** A former sales associate who has mastered at least one-tenth of the dBase III Plus manual.
- **Systems Integrator:** A former consultant who understands the term AUTOEXEC.BAT.
- **AUTOEXEC.BAT:** A sturdy aluminum or wooden shaft used to coax AT hard disks into performing properly.
- **Backup:** The duplicate copy of crucial data that no one bothered to make; used only in an abstract sense.
- **Clone:** One of the many advanced-technology computers IBM is beginning to wish it had built.
- **Convertible:** Transformable from a second-rate computer to a first-rate doorstep or paperweight (Lexical note: replaces the term "junior.").
- **Copy Protection:** A clever method of preventing incompetent pirates from stealing software and legitimate customers from using it.
- **Database Manager:** A program that allows users to manipulate data in every conceivable way except the absolutely essential way they conceive of the day after entering 20M of raw information.
- **EMS:** Emergency medical service; often summoned in cases of apoplexy induced by attempts to understand extended, expanded or enhanced memory specifications.
- **Encryption:** A powerful algorithmic encoding technique employed in the creation of computer manuals.
- **FCC-Certified:** Guaranteed not to interfere with radio or television reception until you add the cable that is required to make it work.
- **Hard Disk:** A device that allows users to delete vast quantities of data with simple mnemonic commands.
- **Integrated Software:** A single product that deftly performs hundreds of functions the user never needs and awkwardly performs the half-dozen he uses constantly.
- **Laptop:** Smaller and lighter than the average breadbox.

Continued on page 28.

VAX System News

Computer Sciences Department Unix Support

Any questions regarding the Computer Sciences Department Unix machines (Sequent and NBI) should be directed to the Computer Sciences Department new Technical Support telephone number. The number is 565-4498.

Research VAX Deinstalled, CS Node Names Change

The Research VAX was powered off permanently on Monday, September 24th and the Sequent was moved into the Research VAX room (550F) on Tuesday, September, 25th. The node name DEPT.CSCI.UNT.EDU was switched from the Research VAX to the Sequent. The official node name of the Sequent, then, switched from SEQUENT.CSCI.UNT.EDU to PONDER.CSCI.UNT.EDU. The previous node names for both the Research VAX and the Sequent have been aliased for backwards compatibility. Also, Call 780 on the Sytek LAN now connects to the Sequent.

New FINDHOST Qualifier

FINDHOST now has a /DOMAIN qualifier which returns domain names for the Internet. See HELP FINDHOST/DOMAIN for more information.

HELP NETWORKS Expanded

The NETWORKS help topic has been expanded. Many new networks and countries are listed. ■

The Best of the BBS

Edited by Mark Thacker, VAX Programmer/Operator
(Mark@UNT.VAX)



Welcome to the **Best of the BBS** column. This column highlights some of the more interesting and useful discussions on the UNT BBS. For those of you not familiar with the BBS, here is how to log into the UNT BBS.

- Sign-on by typing **CALL DEC** at the LAN prompt and then entering BBS as your Username at the VAX prompt.
- If you are already logged-on to the VAXcluster, type **BBS** at the \$ prompt.

The opinions expressed in this column do not necessarily reflect the views of Academic Computing Services or the Computing Center. Also, information in **Best of the BBS** has not been checked for accuracy.

BBS New Direction

From: Mark Thacker - VAX Operator/Programmer, "Best of the BBS" Compiler
Many of you may notice that month's column is longer than normal. In fact, "Best of the BBS" was not even in the last issue of *Benchmarks*. The truth is that since the BBS was restarted some time back, the posts have been of a more useful nature. Messages are cleaner, more concise, and more pertinent to the subject of the message boards.

I just wanted to thank everyone who uses the BBS for sticking through some rough times and supporting the new life of the BBS. I am sure that we will see the BBS continue in its new direction in the future with everyone's continued support.

Kermit for Amiga

#165

Subject : Kermit protocol

This BBS apparently only supports kermit for a file-transfer protocol. I have never heard of it. Does anybody know of (or have, for that matter) a term prog for the Amiga that supports kermit? I would prefer something PD or shareware, but that might be wishful thinking. Any help in this department would be greatly appreciated.

#174 Reply to #165 29-AUG-1990
20:50:40.85

Subject : RE: Kermit protocol

Hi Mark, You can get C-kermit for the Amiga off of this bulletin board by doing an ascii download of the files ckiker.boe and ckiboo.bas.ckiker.boe is an encoded version of C-kermit for the Amiga. ckiboo.bas is a basic program that will turn the ascii version into an executable. It would probably be easier to just get a disk with the programs on it. There are several nice public domain and shareware programs that include kermit.

#184 Reply to #171 30-AUG-1990
08:29:29.59

Subject : RE: Kermit protocol

You are right that Dr. Philip Baczewski is the right person to talk to. Actually though, he is not in charge of Academic Computing Services. He is the Academic Mainframe User Support Manager and a heck of a nice guy too... :) The phone number to reach him is 565-2324.

**Prodigy's Latest Denton
Phone Number**

#312 9-SEP-1990 02:32:32.12

Subject : Prodigy

Prodigy now has a number for Denton it is 565-0552, however you need the latest version 3.1 to hook up to it.

**Anonymous FTP Into the
BBS?**

#12 12-JUL-1990 19:47:42.05

Subject : Can you ftp software for the bbs?

Hi, I was kind of curious about something. I have some software that I would upload but it takes so long to do under Kermit. Most of the stuff I got via ftp so it seems to me that you could just anonymous ftp it yourself into the appropriate directory instead of me uploading it to the bbs. I don't see why this would be a problem and it would save a great deal of time.

VAXCLUSTER USAGE STATISTICS

August Top Ten Programs: CPU Time Used

Program	Description	CPU Time	Percent of Total
1. User programs	Compiled Programs	17 21:31:09.80	77.9
2. NEWS	ANU News Utility	2 00:01:47.76	8.7
3. BACKUP	Disk Backups	0 09:50:12.05	1.9
4. NNTP_TCPWIN	News Transfer Utility	0 09:03:30.87	1.6
5. EDT	Editor	0 04:48:44.71	0.9
6. MAIL	VMS Mail	0 04:07:29.01	0.7
7. PASCAL	Pascal Compiler	0 03:30:38.58	0.6
8. TPU	TPU Editor	0 02:58:26.89	0.5
9. LOGINOUT	User login	0 02:32:39.84	0.5
10. PACSPROCESS	Accounting	0 02:15:36.72	0.4
Total		22 23:37:46.42	

August Top Ten Programs: Frequency of Runs

Program	Description	Number of Runs	Percent of Total
1. LOGINOUT	User login	39745	16.1
2. User programs	Compiled Programs	32557	13.2
3. SET	VMS Utility	29001	11.7
4. DIRECTORY	VMS Utility	20808	8.4
5. DELETE	VMS Utility	17606	7.1
6. SEND	Bitnet Message Utility	9836	4.0
7. EDT	Editor	9232	3.7
8. SYSLOGIN	User Login	8654	3.5
9. TYPE	VMS Utility	8473	3.4
10. SHOW	VMS Utility	6483	2.6
Total		247572	

Just an idea

#13 Reply to #12 13-JUL-1990
09:57:01.27

Subject : RE: Can you ftp software for the bbs?

I do not allow anonymous uploading via FTP for several reasons. A big one is that the BBS has some data files it uses to tell you what is available for download (it is MUCH faster than reading the directory). When files just get stuck out there, the BBS doesn't know about them.

If you have an account on VMS, the NBI, the Research VAX, or the Sequent, you could FTP the files in a subdirectory on one of those accounts, tell me what directory it is in, and then

I could move it in the BBS. It would be useful though if you had a file with one or two line description of each file.

The Latest Archive Programs

#156 25-AUG-1990 03:11:21.68

Subject : arc/zips

here's a question that's bound to find out if there is any life out there at all...

what are the happening achival programs? i've been using pkarc & pkxarc for a while. i haven't really looked into the newer archival programs as i've gotten used to using the programs listed above.

simply put(it's the only way i can)...
what are the best archivers and why?

VAX COMPUTER CLUSTER

#159 Reply to #156 25-AUG-1990
15:29:30.21

Subject : RE: arc/zips

Hi Alan, pkzip is the one to use if you don't mind sending in a registration fee. Pkzip compresses better than arc so bbs can store more files on their hard disks and users can fit more data files on their disks. pkzip is easy to use so even the appliance operator type of computer user can use it. The military mostly uses

lharc because it compresses a hair better than pkzip and lharc is free. Unfortunately lharc is a lot slower compressing and decompressing the archive. I use lharc a lot myself but unfortunately the lharc on the research vax is not compatible with lharc for pee cees so it is not good for archiving files that I will using on pee cees.

I hope that I helped.

#160 Reply to #159 26-AUG-1990
13:10:45.15

Subject : RE: arc/zips

Hi again, I saw some statistics on the net and their findings were the opposite of the tests that I ran. The test showed pkzip compressing slightly better than lharc. Like I said before, I still like lharc because it compresses better than any other free compression programs.

I guess that the compression varies with the data so your millage may vary.■

COMPUTING TECHNICAL SERVICES

Mainframe Performance Statistics

Operating Systems Performance Statistics for August

CPU	SYSTEM	Planned Production Hours	Production Hours Achieved	System Uptime
ACAD	VM/XA2	718.00	716.99	99.9%
ACAD	VM/SP5	338.40	338.20	99.9%
ACAD	MUSIC/SP	686.22	675.42	98.4%
ACAD	MVS/JES2	717.00	705.16	98.3%
ACAD	COMPLETA	709.79	679.78	95.8%
ADMN	MVS/JES2	744.00	739.86	99.4%
ADMN	COMPLETA	341.00	339.42	99.5%
ADMN	ADABASA	722.34	717.50	99.3%

- The ACAD CPU achieved 100% uptime in August.
- The HDS/7360 DASD achieved 100% uptime in August.
- The HDS/7380 DASD achieved 100% uptime in August.
- The ADMN CPU achieved 100% uptime in August.
- The HDS/7360 DASD achieved 100% uptime in August.
- The HDS/7380 DASD achieved 100% uptime in August.
- The EMC Solid State Disk achieved 100% uptime in August.■

Key Causes Of Lost Productivity In August: ACAD CPU

Miscellaneous

1. Systems Software Development. 32.45 HOURS
 2. Reconfiguring MVSSP and MUSIC operating systems to run in first level under VM/XA. 27.65
 3. Operator mistake in running MUSIC Daily Backup. 1.67
- GRAND TOTAL 61.77 HOURS

Key Causes Of Lost Productivity In August: ADMN CPU

CPU, Tape, and Disk Subsystems (HDS)

1. Multiple device read/write failures with HDS 7420 tape transport devices. 5.25 HOURS

Miscellaneous

1. Systems Software Development. 1.17 HOURS
- GRAND TOTAL 6.42 HOURS

COMPUTING TECHNICAL SERVICES

Disk Backup Schedules

SYSTEM	BACKUP	DESCRIPTION
Administrative MVS/SP	Daily	Monday - Friday around 7 p.m. (after COM-LETE is shut down) & on Saturday & Sunday if COM-LETE has been up that day.
	Weekly	Full pack dumps taken each Sunday morning.
	Monthly	Full pack dumps taken on the first day of each month.
Academic MVS/SP	Daily	Monday - Sunday during the early hours of the morning.
	Weekly	Full pack dumps taken each Sunday.
	Monthly	Full volume dumps taken on the first day of each month.
MUSIC/SP	Daily	Wednesday - Monday starting at 4 a.m. and lasting about 30 minutes.
	Weekly	Tuesday mornings at 3 a.m., these last about 2 hours.
	Semester	Once a semester, a permanent backup is taken.
VM/XA	VM Weekly	Early every Wednesday morning.
	CMS mini-disks	Daily backup performed early every morning. Weekly backup every Wednesday starting at 3 a.m..
VAXcluster	Semester	Once a semester, a permanent backup is taken.
	Daily	Incremental backups are Thursday at 6 p.m. Saturday & Sunday at 5 p.m.
	Weekly	Full backups are performed every Friday beginning at 8 a.m. generally last all day.
	Monthly	A "stand alone" backup is performed monthly. Dates and times are given in the system log-on message.
	Semester	Once a semester, a permanent backup is taken.

ACADemic (HDS) Program Hit Parade

August Top Ten Programs : Frequency Of Runs

Program	Description	#of Runs	% of Total
1. SASLPA	SAS	3404	11.9
2. PGM=*DD	Compiled Program	3185	11.1
3. IEBTPCH	IBM List Utility	3120	10.9
4. IEWL	Linkage Editor	3041	10.6
5. IDCAMS	VSAM Utility	2964	10.4
6. IERGENER	IBM Utility	2042	7.1
7. IGYCRCTL	VS COBOL2 Compiler	1942	6.8
8. IKJEFT01	Password Change	1405	4.9
9. SPSSX	SPSS-X	943	3.3
10. IEFBR14	IBM Null Utility	678	2.4

August Top Ten Programs: CPU Seconds Used

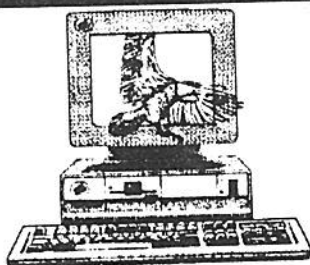
Program	Description	CPU Seconds	% of Total
1. SASLPA	SAS	130578	54.1
2. PGM=*DD	Compiled Program	29921	12.4
3. COMPLET4	Academic COM-LETE	19130	7.9
4. SPSSX	SPSS-X	11448	4.7
5. SSS4001	Operations Automation	11089	4.6
6. IGYCRCTL	VS COBOL2 Compiler	4830	2.0
7. ISTINM01	VTAM Utility	4653	1.9
8. ADARUN	ADABAS Utility Module	3531	1.5
9. IDCAMS	VSAM Utility	2769	1.1
10. SPCHLCOB	COBOL2 Report Writer	2743	1.1

The programs listed in this section were used the most frequently on the HDS ACADemic CPU during August, 1990. Please Note that ACAD is the official designation of the HDS/8083 CPU that is dedicated to faculty and student use. The HDS/8083 CPU reserved for University administrative purposes is termed ADMN.■

Computer Terminology : Real World Definitions

Continued from page 23.

- **Multitasking:** A clever method of simultaneously slowing down the multitude of computer programs that insisted on running too fast.
- **Network:** An electronic means of allowing more than one person at a time to corrupt, trash or otherwise cause permanent damage to useful information.
- **Portable:** Smaller and lighter than the average refrigerator.
- **Support:** The mailing of advertising literature to customers who have returned a registration card.
- **Transportable:** Neither chained to a wall nor attached to an alarm system.
- **Printer:** An electromechanical paper shredding device.
- **Spreadsheet:** A program that gives the user quick and easy access to a wide variety of highly detailed reports based on highly inaccurate assumptions.
- **Thought Processor:** An electronic version of the intended outline procedure that thinking people instantly abandon upon graduation from high school.
- **Upgraded:** Didn't work the first time.
- **User Friendly:** Supplied with a full-color manual.
- **Vapor Ware:** Announced but unreleased products; has a way of never materializing.
- **Very User Friendly:** Supplied with a disk and audiotape so the user need not bother with the full-color manual.
- **Version 1.0:** Buggier than Maine in June; eats data.
- **Version 1.1:** Eats data only occasionally; upgrade is free, to avoid litigation by disgruntled users of Version 1.0.
- **Version 2.0:** The version originally planned as the first release, except for a couple of data-eating bugs that just won't seem to go away, no free upgrades or the company would go bankrupt.
- **Version 3.0:** The version in the works when the company goes bankrupt.
- **Video Text:** A moribund electronic service offering people the privilege of paying to read the weather on their television screens instead of having Willard Scott read it to them free while they brush their teeth.
- **Warranty:** Disclaimer.
- **Workstation:** A computer or terminal slavishly linked to a mainframe that does not offer game programs.



University
of North
Texas
Computing
Center

Richard A. Harris, Associate Vice President for Computing
Steve Minnis, Director of Computing Technical Services
Dave Molta, Director of Academic Computing
Coy Hoggard, Director of Administrative Computing
Claudia Lynch, *Benchmarks* Editor
Dr. Philip Baczewski, *Benchmarks* Associate Editor

Computing Center Short Course Registration Form

Please complete this form and return it AS SOON AS POSSIBLE if you wish to attend any of the short courses listed below. You may also register over the phone by calling (817) 565-2324. **FACULTY AND STUDENTS HAVE FIRST PRIORITY TO REGISTER FOR THESE CLASSES.**

NAME: _____ FACULTY ____ STAFF ____ STUDENT ____

DEPT: _____ UNDERGRADUATE ____ GRADUATE ____

PHONE: _____ MAILING ADDRESS: _____

SUPERVISOR SIGNATURE _____

I wish to attend:

- | | |
|---|--|
| <ul style="list-style-type: none">• Introduction to IBM JCL (ISB 123):
____ Monday, October 15: 5:30-7:30 p.m.• Introduction to BITNET (ISB 123):
____ Thursday, October 11: 3:00-5:00 p.m.• Introduction to CMS (ISB 110):
____ Tuesday, October 2: 3:00-5:00 p.m.
____ Monday, October 8: 3:00-5:00 p.m.
____ Monday, October 29: 5:30-7:30 p.m. | <ul style="list-style-type: none">• Introduction to SPSS-X (ISB 123):
____ Thursday, October 4: 3:00-5:00 p.m.• Introduction to WordPerfect 5.1:
____ Friday, October 12: 1:00-4:00 p.m.• Introduction to SAS (ISB 110):
____ Friday, October 5: 1:00-4:00 p.m.
____ Thursday, November 1: 2:00-5:00 p.m.• Introduction to Hypercard (ISB 6):
____ Wednesday, October 3: 1:00-3:30 p.m. |
| <ul style="list-style-type: none">• Introduction to Procomm Plus (ISB 123):
____ Monday, October 1: 1:00-2:00 p.m.• Introduction to Microsoft Word (ISB 6):
____ Wednesday, October 17: 1:00-3:30 p.m.• Introduction to Electronic Spread Sheets (ISB 110)
____ Tuesday, October 23: 3:00-5:00 p.m. | <ul style="list-style-type: none">• Introduction to SAS PC (ISB 110):
____ Monday, October 22: 2:00-5:00 p.m.• Advanced Microsoft Word (ISB 6):
____ Friday, October 26: 1:00-3:30 p.m. |

I would like to see more classes offered: _____ on weekends: _____ at night.

Comments:



**Academic Computing Services
The Computing Center
NT Box 13495
University of North Texas
Denton, TX 76203
FAX 817-565-4060**

Get a Subscription to *Benchmarks*

Benchmarks is a vital link between the UNT Computing Center and the users of our facilities. It is important for all users of the computing facilities to maintain a file of these newsletters because they contain materials which will periodically update existing documents as well as information and suggestions on uses of OS/MVS, MUSIC/SP, the VAXcluster, Microcomputers, and other resources available to UNT students and faculty. To facilitate the dispersal of *Benchmarks*, *** FREE *** subscriptions are available. To receive yours, send the following information to us either by snail mail (the post office or campus mail), FAX (817) 565-4060, or through electronic mail, to the UserID AS04 on MUSIC, VMS, or CMS.

Name:

Mailing Address:

PLEASE GIVE A CAMPUS ADDRESS (NOT BOX) IF POSSIBLE! - It's Cheaper !!

☐ **Renewal** ☐ **Change of Address** ☐ **Cancel Subscription**



Academic Computing Services

The Computing Center

NT Box 13495

University of North Texas

Denton, TX 76203

FAX 817-565-4060
